COMPUTER SCIENCE OPERATIONAL ENGINEERING BACHELOR PROGRAM
Training Output Requirements

https://www.felvi.hu/felveteli/szakok_kepzesek/szakleirasok/!Szakleirasok/index.php/szak/20182/szakleiras

1. **Responsible Instructor for the Program:**
   Dr. László Pitlik, PhD, Associate Professor
2. **English Name of the Bachelor Program:**
   Computer Science Operational Engineering
3. **Qualification as Indicated on the Diploma:**
   Computer Science Operational Engineering
4. **Degree Level:**
   Bachelor's Degree (baccalaureus, Bachelor of Profession, BProf)
5. **Field of Study:**
   Informatics
6. **Classification in the Unified System of Educational Fields:**
   482/0611
7. **Training Branch:**
   Informatics
8. **Duration of the Program:**
   6 semesters;
   Full-time program: 1260 hours + 320 hours of professional internship
   Part-time (correspondence) program: 378 hours + 320 hours of professional internship
9. **Number of Credits Required for the Bachelor's Degree:**
   180 credits
10. **Purpose of the Bachelor Program:**
    The aim of the program is to train computer science operational engineers who are capable of installing, operating, and developing technical IT applications, IT infrastructure systems, and services on a given software platform, as well as understanding their data and program systems. Graduates are prepared to continue their studies at the master's level.
11. **Specializations: -**
12. **Structure of the Program: -**
13. **Professional Internship Requirements and Key Criteria:**
    Students participate in an off-campus professional internship during the 5th semester at business entities. The internship duration is a minimum of 8 weeks.
    Internship locations primarily include enterprises, public service providers, and nonprofit organizations. The fundamental requirement is that the internship site must provide an opportunity for students to deepen their practical knowledge, apply theoretical knowledge in practice, and complete their thesis.
    The selection of the internship location is carried out through careful prior professional consultation. Once an internship site is approved, the mentoring faculty member at the university contacts the business entity. After finalizing the student's program, the university signs a contract with the host company or institution.

Students are required to complete their internship at the designated location. The work schedule and task conditions are determined by the business entity in agreement with the student's mentor.

I. Objectives and Professional Competencies to be Acquired During the Internship:

- The professional internship has a dual purpose within the cooperative training framework: it must both enhance students' competencies and meet the actual professional needs of the internship site. The 5th semester, according to the curriculum, is the planned period for the 320-hour continuous professional internship. During this semester, students are required to complete only one academic unit besides the internship.
- The internship can only be conducted at a site with which the university has a cooperation agreement and where the student signs an internship work contract.
- Students must register for the internship in the Moodle system no later than the last week of the previous semester's academic period. Approval from the departmental internship coordinator must be obtained before applying. All documents related to the internship, including approval, the student work contract, and evaluation documents, must be uploaded to Moodle.

II. Evaluation Methods of Student Performance During the Internship:

- The internship is evaluated on a 100-point scale as follows:
  - How significantly did the intern's competencies develop based on documentation (work logs)? (0-50 points)
  - To what extent did the intern meet expectations as a future employee? (0-50 points)
  - The final grade for the internship is assigned by the department's internship coordinator based on submitted documents and the evaluation of the internship supervisor.

III. Organization of the Internship, Supervision, and External Internship Supervisors:

- Internship supervisors are designated by the partner company's management. The department head organizes a one-day training session to introduce supervisors to key practical aspects and relevant elements of the university's pedagogical model, providing a brief methodological preparation.
- The department head personally inspects each internship site once per semester and monitors the Moodle platform, which serves as the communication channel between supervisors and interns.
- After the internship, supervisors receive feedback on their work from the department head.
- Partner companies provide controlled access to their project management software and collaborative work system logs, ensuring confidentiality.
- Individual internship sites can tailor the general framework to their specific professional needs.
- Students must enroll in the "Professional Internship" course in the university's Neptun system.

14. <u>Thesis Requirements:</u>

I. Purpose of the Thesis:

- The thesis aims to demonstrate that students can independently analyze and develop a selected topic related to their field, proving their knowledge of relevant theories, analytical, development, quality assurance, and control methods. They should be familiar with domestic and international literature and apply their knowledge scientifically and creatively.

- Successfully defending the thesis also confirms that graduates can perform planning, analysis, organization, development, quality assurance, control, and management tasks in economic organizations and institutions with an IT focus.

II. Topic Selection:

- The thesis topic must allow students to demonstrate their ability to apply university-acquired knowledge and professional experience gained during their internship in a meaningful way. Students choose a topic from the departmental listings.
- A scientific student research paper (TDK) may be accepted as a thesis if it meets formal and content requirements and is recommended by the Scientific Student Research Council.

III. General Thesis Requirements:

- Students must analyze their chosen topic by integrating theoretical and practical aspects, utilizing empirical research, statistical data, and other sources.
- The thesis must not be purely descriptive or a mere reproduction of existing literature.

15. <u>Final Examination Requirements and Structure:</u>

- The final examination consists of two parts: the defense of the thesis and an oral examination covering pre-determined topics outlined by the department.
- The examination board evaluates whether students possess the learning outcomes (competencies) specified in the Training and Output Requirements, verifying them through problem-solving tasks.
- The diploma classification is determined by the rounded average of:
  - The comprehensive final examination result
  - The student's average semester study performance as recorded in the transcript

16. <u>Foreign Language Requirements: -</u>

17. <u>Course Information:</u>

- Course details are available on Moodle (http://moodle.kodolanyi.hu).
- The interdisciplinary examination logic supports course autonomy while integrating evaluation processes across courses.
- Each semester, complex tasks are assigned in consultation with course leaders, ensuring that different aspects align with independent course grading systems.
- The evaluation includes both the initial and revised versions of assignments, following a software development/testing/debugging logic.
- The revised version must be presented before a multi-member examination board, which includes university faculty as well as corporate education partners and industry experts.

Comprehensive Curriculum BProf Computer Science Operational Engineering BA

<table>
<tr><th rowspan="2">Less on</th><th rowspan="2"></th><th colspan="4">1.</th><th colspan="4">2.</th><th colspan="4">3.</th><th colspan="4">4. **</th><th colspan="4">5.</th><th colspan="4">6.</th></tr>
<tr><th>Subject Name</th><th>A</th><th>B</th><th>C</th><th>Subject Name</th><th>A</th><th>B</th><th>C</th><th>Subject Name</th><th>A</th><th>B</th><th>C</th><th>Subject Name</th><th>A</th><th>B</th><th>C</th><th>Subject Name</th><th>A</th><th>B</th><th>C</th><th>Subject Name</th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>30/9</td><td>Sustainability P&L Module Lectures</td><td>Sustainability</td><td>1</td><td>L</td><td>5</td><td>Academic Writing and Rhetoric</td><td>1</td><td>L</td><td>5</td><td>Basic Economic and Financial Skills</td><td>1</td><td>L</td><td>5</td><td>Trends in IT</td><td>1</td><td>L</td><td>5</td><td>Law and Society</td><td>1</td><td>L</td><td>5</td><td>The European Union and Hungary</td><td>1</td><td>L</td><td>5</td></tr>
<tr><td>30/9</td><td></td><td>Operation Systems</td><td></td><td>S</td><td>5</td><td>Electronics</td><td></td><td>L</td><td>5</td><td>Elective Course 1.</td><td>4</td><td>L</td><td>5</td><td>Elective Course 2.</td><td>4</td><td>L</td><td>5</td><td rowspan="5">Internship</td><td rowspan="5">3</td><td rowspan="5">P</td><td rowspan="5">25</td><td>AI-projects</td><td></td><td>S</td><td>5</td></tr>
<tr><td>30/9</td><td></td><td>Networks and Computer Architectures</td><td></td><td>S</td><td>5</td><td>Human Behavior and Communication</td><td></td><td>L</td><td>5</td><td>System Planning</td><td></td><td>S</td><td>5</td><td>IT Protection and Security</td><td></td><td>S</td><td>5</td><td>Knowledge Management</td><td></td><td>S</td><td>5</td></tr>
<tr><td>30/9</td><td></td><td>Data Structures and Algorithms</td><td></td><td>S</td><td>5</td><td>User Interfaces and Visualization</td><td></td><td>S</td><td>5</td><td>Databases I.</td><td></td><td>S</td><td>5</td><td>Databases II.</td><td></td><td>S</td><td>5</td><td rowspan="3">Thesis</td><td rowspan="3">2</td><td rowspan="3">P</td><td rowspan="3">15</td></tr>
<tr><td>30/9</td><td></td><td>Mathematical Primer</td><td></td><td>S</td><td>5</td><td>System Modeling</td><td></td><td>S</td><td>5</td><td>Software Operation</td><td></td><td>S</td><td>5</td><td>Software Testing</td><td></td><td>S</td><td>5</td></tr>
<tr><td>60/18</td><td></td><td>Programming Principles and Methods</td><td></td><td>S</td><td>5</td><td>Programming I.</td><td></td><td>S</td><td>5</td><td>Programming II.</td><td></td><td>S</td><td>5</td><td>Programming III.</td><td></td><td>S</td><td>5</td></tr>
<tr><td></td><td>Criteria Requirements</td><td colspan="4">Sport*</td><td colspan="4">Sport*</td><td colspan="4">Sport*</td><td colspan="4">Sport*</td><td colspan="4"></td><td colspan="4"></td></tr>
<tr><td></td><td>Criteria Requierements</td><td colspan="4">Mentoring*</td><td colspan="4">Mentoring*</td><td colspan="4">Mentoring*</td><td colspan="4">Mentoring*</td><td colspan="4">Mentoring*</td><td colspan="4">Mentoring*</td></tr>
<tr><td>Credit</td><td></td><td colspan="4">30</td><td colspan="4">30</td><td colspan="4">30</td><td colspan="4">30</td><td colspan="4">30</td><td colspan="4">30</td></tr>
<tr><td>Hours</td><td colspan="5">210/63</td><td colspan="4">210/63</td><td colspan="4">210/63</td><td colspan="4">210/63</td><td colspan="4">210/63</td><td colspan="4">210/63</td></tr>
</table>

* Only for full time courses

** Mobility 4. semester

A Comment

[1] Sustainability P&L Module: 30 credit

[2] Diploma/Portfolio/Thesis 15 credit

[3] Internship: 350/329 (320 hours, Diligence-Period, Exam-Period , Summer), 25 credit

[4] Optional courses 10 kredit

B Form of Work

L Lecture

S Seminar

P Practice

C Credit

Detailed Curriculum

Code	Subject Name	Credit	Classes	Requirement (final course grade)	Semester	Modules	Prerequisite	Department in charge
SK 022a	Sustainability	5	30/9	final exam	1.	lect.		SK
IN 026a	Mathematical Primer	5	30/9	term mark	1	sem.		INF
IN 027a	Data Structures and Algorithms	5	30/9	term mark	1	sem.		INF
IN 028a	Networks and Computer Architectures	5	30/9	term mark	1	sem.		INF
IN 029a	Operation Systems	5	30/9	term mark	1	sem.		INF
IN 104a	Programming Principles and Methods	5	60/18	term mark	1	sem.		INF
IN 031a	Mentoring 1. (Only full-time s.m.)	-	-	signature	1	practice		INF
SK 021a	Sport 1. (Only full-time s.m.)	-	-	signature	1	practice		SK
KO 942a	Academic Writing and Rhetoric	5	30/9	final exam	2	lect.		KO
IN 105a	Electronics	5	30/9	final exam	2	lect.		INF
IN 034a	System Modeling	5	30/9	term mark	2	sem.		INF
IN 035a	Human Behavior and Communication	5	30/9	final exam	2	lect.		INF
IN 041a	User Interfaces and Visualization	5	30/9	term mark	2	sem.		INF
IN 036a	Programming I.	5	60/18	term mark.	2	sem.		INF
IN 037a	Mentoring 2. (Only full-time s.m.)	-	-	signature	2	practice		INF
SK 023a	Sport 2. (Only full-time s.m.)	-	-	signature	2	practice		SK
GA 311a	Basic Economic and Financial Skills	5	30/9	final exam	3.	lect.		GAM
IN 038a	System Plannig	5	30/9	term mark	3	sem.		INF
IN 039a	Databases I.	5	30/9	term mark	3	sem.		INF
IN 040a	Software Operation	5	30/9	term mark	3	sem.		INF
IN 108a	Programming II.	5	60/18	term mark	3	sem.		INF
IN 043a	Mentoring 3. (Only full-time s.m.)	-	-	signature	3	practice		INF
FM	Elective course 1.	5	30/9	final exam	3	lect.		Institutional
SK 025a	Sport 3. (Only full-time s.m.)	-	-	signature	3	practice		SK
IN 107a	Trends in IT	5	30/9	final exam	4	lect.		INF

IN 044a	IT Protection and Security	5	30/9	term mark	4	sem.		INF
IN 109a	Databases II.	5	30/9	term mark	4	sem.		INF
IN 110a	Software Testing	5	30/9	term mark	4	sem.		INF
IN 111a	Programming III.	5	60/18	term mark	4	sem.		INF
IN 050a	Mentoring 4. (Only full-time s.m.)	-	-	signature	4	practice		INF
FM	Elective course 2.	5	30/9	final exam	4	lect.		Institutional
SK 026a	Sport 4. (Only full-time s.m.)	-	-	signature	4	practice		SK
NE 233a	Law and society	5	30/9	final exam	5	lect.		NE
IN 052a	Mentoring 5. (Only full-time s.m.)	-	-	signature	5	practice		INF
IN 112a	Internship	25	180/ 54	term mark	5	practice		INF
NE 234a	The European Union and Hungary	5	30/9	final exam	6	lect.		NE
IN 113a	AI-projects	5	30/9	term mark	6	sem.		INF
IN 114	Knowledge Management	5	30/9	term mark	6	sem.		INF
IN 054a	Mentoring 6. (Only full-time s.m.)	-	-	signature	6	practice		INF
IN 115a	Thesis	15	120/ 36	signature	6	practice		INF